Farmer Participation in Cropping Systems Research

by

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SUMMARY

Todate most of the success of the cropping systems research methodology can be attributed to the research process taking place in the physical environment in which it will be used. Many social aspects into which the new technology must fit have not been integrated into research design in any systematic manner. Specific cropping systems teams have made some effort, but it has been very much on a trial and error approach. The next step in cropping systems research is to include more social factors in the research process. The researcher is faced with three problems: What information can the farmer supply. How is the information to be used and how to get the information efficiently. The researchers have two directions they can take. The first is to continue the trial and error approach, the second, to include social scientists in the research team. Although the social scientists do not have research methodology that will immediately integrate into a technology development research they do have a range of knowledge and methodologies that can make a contribution. If farmers are to become effective partners in the research process the gap between the agricultural scientists and the farmer must be closed. Including social scientists in the research team should help close the gap.

THE ROLE OF FARMER PARTICIPATION IN CROPPING SYSTEMS RESEARCH

The need for farmer participation is stressed by all those who have been directly involved in cropping systems research for any length of time. "The farmer must be part of the research team, involved in making plans and decisions at all levels and stages and sharing credit and results" (Harwood p.36). "The research framework had to satisfy several requirements: Farmers had to participate in the design and testing of new multiple cropping technologies" (Zandstra et al 1981, p.6). This emphasis on participation of farmers in all phases of the research programme may not be stressed by those who have not been directly involved with a programme for some period of time. In a comprehensive review of farming systems research, farmers are explicitly left out of planning on-farm research (Shaner et al p. 35)

The reason for stressing that farmers should be involved in all phases of CSR is that "the characteristics that a technology must have in order to be most appropriate to a given problem should emerge naturally from the very process of creation" (United Nations University p.16). Thus, to ensure appropriate technology, farmers involvement should start at the initial stage of research in which problems and objectives of research are defined. The importance of farmer involvement in the research process is not a new discovery. "Most of the early progress in Mexico (in developing HYV wheats) resulted from direct contacts between research men and interested farmers"(Stakeman et al p.114).

Although including farmers in the research process should improve the efficiency of the research, it is still research and unrealistic expectations should be guarded against. In a study of three in-house research laboratories of large industrial corporations in the United States it was found that 40% of the research projects were never completed, 27% of the projects were never commercialized, 20% were commercialized but not profitable, and 13% of the projects showed a profit (Fishelsom). Thus, if an in-house research group concerned with electronics and mechanics can only achieve 13% real adoption we should not have unrealistic expectations for agricultural research which deals with a great many more variables and has the

largest number of production units of any industry in the world.

Since those directly associated with cropping systems have stressed the importance of farmer participation in the research process it would seem worthwhile to review the current types and level of participation that are occuring in cropping systems research (CSR) in the Asian Cropping Systems Network (ACSN).

Current Farmer Scientist Interaction in ACSN

Although there are sites which have much higher or much lower levels of farmer participation the following description will outline the general level and type of farmer participation developed through trial and error in the ACSN.

The farmer's introduction to CSR usually occurs at a meeting called by the extension staff or the village leaders where the scientists explain that they would like to conduct research in the village with the farmers. Following the meeting a few farmers are asked a large number of questions, by one or more members of the research team, about their farming and in some cases their consumption systems. After these questions the researchers disappear and the farmers are not sure if the whole process is over. After some time the researchers re-appear and call another meeting at which they present a set of experiments that include new cropping patterns and testing components of the farmers existing patterns. At this or a subsequent meeting the farmers are asked to choose which experiments they would like to conduct on their fields. If the experiments are totally irrelevant or the results are known already. The farmers may raise objections, otherwise they tend to go along with the first years experiments whether they think them realistic or not. When the experiments are planted in the farmers' field, he usually starts to understand what it is the researchers are trying to do. Over the duration of the experiment a rapport is built up between the farmer and the research staff, usually the young researchers assigned to the area. The level of this rapport depends upon the technical knowledge and interest in learning of the young scientists. At the same time the biological experiments are taking place, record

keeping of farm and household activities is occuring and some rapport is built up between the interviewers and the farm families. The senior researchers visit the site during the year but in many sites because of language problems a translator must be used. At harvest or immediately after comments are solicited from the farmer and his family by senior researchers who have usually not built up a rapport with the farmers. After this the researchers disappear again and the cycle is started all over again in the following season with another meeting.

Although scientists in the ACSN are concerned with farmer participation in the research process efforts todate have been trial and error. There has been limited documentation within the country or between countries on procedures and techniques found to be effective in making the farmer a true partner.

PROBLEMS WITH FARMER PARTICIPATION IN THE CROPPING SYSTEMS RESEARCH PROCESS

Generally the farmers in cropping systems sites have contributed a considerable amount of physical inputs to the research process. However, the farmers contribution of knowledge and understanding has been very limited. From the researchers point of view there are three basic problems on tapping the farmers knowledge and understanding: (1) what information can the farmer realistically be expected to supply, (2) when this type of information is supplied how can it be built into the overall research programme, and (3) how do we get the farmers' information efficiently.

The first question is what information can the farmer supply. "In emphasizing the importance of active farmer participation in the research process, we do not mean to exaggerate the capacities of the small farmers, but with regard to his own farming system and the conditions affecting it and the needs and interests of his family, he is the resident expert" (United Nations University p.80). More specifically the technologies used by the traditional sector are based very largely on empirical knowledge, which is essentially transmitted by verbal tradition. The knowledge comprises a great

amount of useful information concerning the physical environment and on ways to use this environment to provide the essential needs of life (ibid p.8). "In addition to supplying information on the environment another important local contribution could be, not so much concrete specific techniques, but suggestive approaches to the solution of problems which then may stimulate scientific research into hitherto unexplored directions" (ibid p.20). The information and knowledge we can expect from farmers are a description of his interests and concern (goals), a description of the environment in which he is currently working, a description of his current and past activities to meet his interests and needs, and general indications of possible solutions to his problems. The farmer can also be expected to contribute to the design and evaluation of experiments using a set of criteria based on his needs when an adequate rapport is developed.

The problems of how to integrate the farmers knowledge, ideas and evaluations into cropping systems research programmes is still in its early trial and error stage. The basic problem is that in our traditional agricultural training there is no place for subjective inputs in the decision making process. If we cannot quantify it we ignore it. Todate those projects which have shown good progress and achievement have been able to subjectively incorporate the farmers opinions into the research programmes. This has largely been a result of an individual or individuals within the team having the capacity to listen and understand what the farmer is saying, interpret for the team and then the team give the opinions sufficient weight within the group decision making process. The problem of understanding is part of a much larger problem which will be discussed in a later section of the paper.

In the ACSN there has been no systematic study of how to get information from the farmers. A range of techniques from formal surveys of individual farmers, farm record keeping and informal discussion with groups of farmers in the evening have been used. The key informant survey (Mathema and Van der Veen) appears very promising in getting some types of information. This methodology also solves one of the major problems of long turn around times from data collection to arriving at conclusions (Banta). IRRI has done some work on farmers

recall ability for different activities. Generally within the ACSN there has been a definite move away from collecting massive amounts of data from many farmers to collecting more specific information from a few. This shift has come about from a lack of ability to process masses of data more than as a result of careful study on how to collect data more efficiently. This shift has meant that there is an increased probability of getting a biased sample. One way around this problem is group interviews and continued interaction.

"Generally it is far more effective for the agricultural profession to work with and through an organised party of small farmers" (United Nations University p.80). In the poor rural areas, mechanisms of participation are almost completely lacking and have to be established. This does not merely mean that some local people must participate in certain aspects of the research itself. It means that ways have to be developed by which the local people will become interested in the whole process of generating technology, and hence will be motivated to contribute their experience (ibid p.25). Through trial and error most of the national cropping systems work is moving towards using groups of farmers to participate in the cropping systems research. However, there are still problems.

Urban Versus Rural

"Two researching skills are considered critical to participatory research: awareness of assumptions the researcher takes as baggage into the process, and awareness of ones observational patterns" (Cain). What are the assumptions that a typical agricultural researcher takes into a cropping systems research programme? How do these assumptions compare with the farmers' assumptions? The agricultural researchers and the farmers in Asia have a number of differences that will affect their ability to interact effectively. Generally the agricultural researchers have a technical knowledge in one discipline in agriculture but have little or no understanding of the farm as a way of life. At a major University in Asia, 85 percent of the graduating class in agriculture came from cities of over 200,000 (Dean Banjard Boonsue Personal Communication). The typical agricultural researcher, who is a University graduate, is rich relative to the typical farmer for

whom the researcher is designing technology. Thus the researcher's approach to solving problems and their attitude to risk and uncertainty will be different than the farmers. The agricultural researcher with his urban upbringing and his current urban living environment is market orientated while many farmers in Asia are subsistence orientated. An example of how this might be viewed is to consider labour. To an agricultural scientist the labour of the family is a factor of production while to the farmer his family's work is a combination of production, consumption, family social activities in the community and part of the overall socialisation process for the children in that culture. The agricultural scientist and the farmer have different world views, different objectives and thus different criteria to evaluate success and so many draw totally different conclusions, and thus make different decisions, from observing the same physical or biological phenomena. Although not based on agricultural scientists the following table gives an indication of the problem.

Table 1

Perception of Village Problems

Most Important Problem	District Governors %	Rank	Male Villagers %	Rank
Need for Education	29	2	5	7.5
Poverty	31	1	10	4
Need for roads	3	6	20	2
Need for water	1	7	31	1
Need for land	8	4.5	15	3
Need for occupational equipment	8	4.5	1	9
Other	20	3	6	6
No Problem	0	8.5	7	5
Do not know	0	8.5	5	7.5
Number of respondents	80		3022	

(Roos p.184)

When there is such a clear negative correlation between the two groups ideas on what the major problems are there is little chance of real improvement.

Even if there is agreement on what the problems are there is another problem. The social background of people planning and designing technology carries over into the social implications that the technology they design will carry with it. In a review of the literature there are literally thousands of papers published on characteristics of adoptors of new agricultural technology. Generally the findings are that the adoptors of the new technology have higher education, are more urban orientated, better off financially, are more market orientated, have greater division of production and consumption within the farm unit, and put greater emphasis on cause and effect than fate. In other words, the people who adopt the technology have more characteristics in common with the people who developed the technology than those who did not adopt it. If we could mentally turn the picture around and assume that a group such as the Talisay (a group of "stone age people" living in southern Mindano) were given funds to develop technology to improve the well being of people in Mindano it would be considerably different than the technology developed by a group from an urban university. It is not likely that their technology would be adopted by the rich, urban orientated farmers. The group designing technology implicitly assume that the client group will have the same infrastructure, social system and world views as the designers unless specific action is taken to define other assumptions.

In addition to the urban bias there is also a strong western based discipline orientation among agricultural scientists in Asia. Each discipline has taken a specific sector of the farm and conducted research on it from that discipline's viewpoint. Scattered throughout the literature of the various disciplines there is a wealth of knowledge about agriculture, farmers, and farming in Asia. Unfortunately, as most of us who have tried to draw on this knowledge have found it is useless because many of the interactions and parameters affecting the activity under study have not been recorded. Economic studies of rice production have ignored the soils on which the rice is produced, agronomic studies on fertiliser useage have ignored the

relative cost and availability of fertilizer, sociological studies have ignored technical changes and health studies have ignored food production patterns in the village. In addition to the strong discipline bias from the West there are still pockets of export mentality in the West. In a paper entitled "FSR as a Field Methodology in Third World Countries" we find the following statements "the purpose of this history lesson has been to create awareness that (1) the US Land grant model we are exporting today is a 1982 model (2) the 1982 model is designed to meet needs and problems of US agriculture" (Conklin p.6). The author continues "The next part of our history lesson is to demonstrate that the US model is flawed for direct use in Low Income Countries and that we are relearning lessons FOR the Low Income Countries we once learned for the US" (ibid) (Emphasis added). Giving the advances made in the methodology todate in Asia and Latin America it is questionable if improved methods of getting farmer participation are likely to come from the next land grant model.

If there is such a cultural gap between the agricultural researcher and the farmer, why has cropping systems research been adopted in so many countries and why has it been receiving so much attention. I believe that the main success of cropping systems research todate has been brought about by the advantages of developing technology in the physical environment in which it will be used. However, there is still a major gap in our understanding of the institutional and social parameters affecting technology. A recent study has shown that the major cause of instability of high yielding varieties once they are generally adopted is institutional not environmental (Hazell). This should serve as a warning that developing even more technology considering only the physical environment may be leading to increased instability which in the long run may not benefit the small farmer.

FUTURE DIRECTIONS

If it is accepted that the level of farmer participation in cropping systems research should be increased and that there is a major gap between the view of the agricultural researcher and

the farmer there appear to be two directions which can be taken. The first is to continue on and through a process of trial and error, overtime developing a framework in which farmers information can be collected,utilised and understood. The second alternative is to bring social sciences into the cropping systems research team as an integral part of the programme. Based on a state of the art paper (Whyte) it appears that the two disciplines which have had the most experience in dealing with intercultural problems and communications and therefore should have the most relevant experience to help solve the problem in cropping systems research are anthropology and sociology. Generally anthropology uses an indepth case study type approach while sociology uses a wider survey type approach and then distils out the important relationships. Thus social sciences have the anthropologists with the inductive approach and the sociologists with the deductive approach. Clearly neither of these have all the answers and the different cropping systems groups are going to have to make their own decisions on the relative merits and proportions of each approach to use. It does seem to the author that given the nature of cropping systems research, site specific as it is, the anthropological approach will come closer to meeting the needs in a majority of situations. However, before the decision is made to include an anthropologist or a sociologist in the cropping systems research programme an honest evaluation of the problems and potentials should be made so that all team members understand what is involved. Although not aimed specifically at the role of social sciences in an inter-disciplinary team (Zandstra et al 1979) presents the best discussion todate of the problems, interactions and potentials of an interdisciplinary team which included social sciences.

Some of the potential problems or limitations that are likely to occur by including a social scientist in the cropping systems research programme are discussed first. "Anthropology has a tremendous amount of academic voyourism which may be defined as the study of other people's problems for the self gratification of the student. It is self indulgent, parasitic and sterile" (Goodlad). It would appear that a certain percent of microeconomic studies would also have to be considered academic voyourism. In the workshop on the role of anthropologists in developing new technology held in IRRI in 1981 some of the problems that an interdisciplinary team including

an anthropologist might face were identified:

1. Social scientists have not explained the relationship between social organisation and agricultural technology in understandable terms.
2. Anthropologists have little professional contact with biological and technical scientists. This makes it difficult for them to articulate their potential contribution in terms understandable to scientists from other disciplines.
3. Todate there is no specialised field of agricultural anthropology although there is a field of rural sociology. Anthropologists and many other social scientists lack any training in technical agriculture.
4. Anthropologists tend to view society as static and to concentrate the research on small groups that are not fully integrated into the society. Anthropologists have been largely concerned with reporting what exists or has existed, and have not developed models for projecting agricultural change.
5. Many social scientists conduct their research alone among exotic people who are not representative of a large body of the world's farmers. Frequently, they function as defenders of the traditional way rather than as members of a group concerned with identifying and generating new technology.
6. The scientific methodology is not clearly followed by many anthropologists. Frequently there is no set of working hypothesis, the research is descriptive, site specific,and the sampling is not random and the research results cannot be generalised.
7. The lack of quantification, statistical methods, and clearly articulated models reduce the credibility of social science research among agricultural scientists (The role of anthropologists p.94 95)

In addition to some of these more specific problems that we would expect to find with social scientists entering an interdisciplinary technology generating team, and even more fundamental problem is the lack of interest on the part of social scientists. Out of a list of 38 major research topics that might be attended to by social scientists in the Philippines only one "technology generation and verification among farmers and fisherman" could be considered an input to an interdisciplinary team concerned with developing new technology (Rural Development Committee). In their training, textbooks, journals and

reward structure social scientists concentrate on what is or has been not on what can be. Therefore, we have to accept that there will probably be an internship for anthropologists in technology generation activities.

Although there will be a number of problems when an anthropologist is included in a cropping systems research team, the IRRI workshop identified a number of definite contributions that an anthropologist could make:

1. An anthropologist would help sensitize other team members to farmers goals and practices and to the implications of these for the research.
2. A social scientist should be able to help the team members develop more efficient decision making processes, particularly in regard to the qualitative information coming from the research sites.
3. The social scientist can also make a substantive contribution to the interpretation of what the physical and ecological factors in agriculture mean to human use of current and possible new technology.
4. The social scientist can help define potential as well as actual beneficiary groups of new technology, and interpret the consequences of the technology with respect of these groups. Social scientists can help focus on institutional factors which will provide interdisciplinary teams with a context for evaluating how farmers and other social factors may respond to different technology alternatives.
5. One of the strengths of social science specialists lies in their orientation to the organisational setting and management of resources in rural areas. This includes looking at the capabilities of research and transfer organisations.
6. Social scientists can conduct research on organisational settings into which food production technology will be introduced, and can help to develop new models on how to do research and extension more efficiently (The Role of anthropologists p. 95).

Throughout the ACSN there is an increasing concern with the subsistence farmer. The social scientist can make a significant contribution in helping design technology for subsistence and non-market orientated farmers. Todate our technology has been relatively ineffective in improving the well being of these farmers. The anthropologists conducted most of their research on these groups and should be able to contribute both concepts and research methodology

to a cropping systems research team.

Although the cropping systems research methodology is process orientated, we still find a great emphasis on product orientated activities. The social scientist and particularly the anthropologists are much more process orientated and should be able to strengthen the process orientation of any cropping systems programme. This research process has two components, first getting the scientist involved in the community and the second getting the community involved in developing new technology and overall improvement of the community. The latter can be a slow process and even in a project where social scientists were involved for five years, the conclusion was "the project staff were more successful in involving themselves in community affairs than in getting the community itself involved in the development process" (Zandstra et al 1979). Although the authors sound somewhat dissatisfied a very significant first step was made. A step that only a few of the cropping systems sites in the ACSN have made. Until the cropping systems teams can become a partner with the farmers it is doubtful that the research parameters will be more than the physical and some of the economic factors in the total environment in which the farmer lives and works. Thus, the full potential of the CSR methodology will not be realised and the research programmes will not be as efficient as they could be. Bringing farmers into the research process is the next major methodological issue for cropping systems research and without social sciences it will be a long trial and error process.

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